

REMARKS

Present Status of the Application

This is a full and timely response to the outstanding non-final Office Action mailed on January 8, 2004.

The Applicant would like to thank the Examiner for the review and examination of the application. With respect to the questions raised under 35 USC 103, Applicant respectfully submits that the cited references are deficient to adequately teach the claimed features as recited in the presently-pending claims, and a discussion of the prior art is set forth below.

In view of the following remarks, the Applicant respectfully requests reconsideration and allowance for the claims.

Response to 35 U.S.C. 103 (a) rejection

Claims 5-6, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao et al. (USP 5,660,682, Zhao hereinafter) in view of Sun et al. (USP 5,674,357, Sun hereinafter).

Applicants respectfully traverse the rejection of claims 5 and 6, 11 being unpatentable under 35 because a prima facie case of obviousness has not been established.

To establish a prima facie case of obviousness under 35 U.S.C. 103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention.

Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must “be found in the prior art, and not be based on applicants’ disclosure.”

The present invention is in general related to a method to remove a silicon oxide material formed during a removal of a photoresist layer configured above a silicon containing material. Particularly, claim 5 recites “an oxygen plasma to remove a majority of the photoresist layer, wherein the silicon oxide material is resulted from a reaction between the silicon containing material and the oxygen plasma; and an overetch process using an inert gas plasma to remove a remaining of the photoresist layer and to treat the silicon oxide material.”

In contrast, Zhao teaches a method of forming patterns on **a layer of metal based compound**, wherein the layer of metal based compound is coated with a photoresist (col. 1, ln 10-21). Zhao continues to teach, once the layer is patterned, the photoresist is removed by use of an aqueous solution, wherein during the removal of the photoresist layer, **the aqueous based solutions tend to induce the formation of oxides** on the exposed surfaces of the integrated circuit (col. 1, ln 52, 57). First of all, contrary to the Examiner’s assertion, Zhao’s teaching does not reads on the limitation of an overetch process using an inert gas plasma to remove a remaining of the photoresist layer and to treat the silicon oxide material. Zhao only teaches after removing the photoresist layer, plasma is used to clean the undesirable material. To ensure a complete removal of the unwanted oxide layer formed on the silicon containing layer, the instant case teaches an overetch process, which by definition, implies an additional removal of some of the silicon containing layer. Zhao is completely silent about an overetch process. Second, the present invention teaches a removal of the oxide layer resulted from a reaction between the silicon containing material and the oxygen plasma, whereas Zhao is directed to the removal of

the oxide layer resulted from the aqueous solution used in the removal of the photoresist layer and the metal based compound.

Similar to Zhao, Sun also fails to teach the aforementioned claimed features of the present invention. Sun teaches a method to remove photoresist particles 29, wherein an oxygen plasma is used to form oxidized particulates which are more readily removed upon a subsequent rinsing of the oxidized particulates from the surface of the substrate (col. 5, ln 5-60). Sun specifically emphasizes, in col. 4, ln. 22-30, that "it is critical to the present invention that at minimum either the surface of the semiconductor substrate 10 or the surface of the particulates be susceptible to oxidation in an oxygen containing plasma 12 be susceptible to oxidation in an oxygen containing plasma in a fashion whereby particulates become more hydrophilic. If neither the particulates 12 nor the semiconductor substrate 10 are susceptible to oxidation through exposure to an oxygen containing plasma, the advantages of the present invention may not be realized." Therefore, not only there is no motivation or suggestion to combine Zhao with Sun since **Sun fails to teach using a non-oxygen plasma to remove unwanted particulates, Sun actually teaches away the present invention by specifically teaches using an oxygen plasma to remove unwanted particulates.**

Thus, for at least these reasons, Applicants respectfully assert that there is no motivation or suggestion to combine Zhao with Sun. Moreover, even there were motivation to combine, Zhao in view of Sun still fails to render claims 5 obvious. Since claims 6 and 11 are a dependent claim, which utilizes claim 5 as a base claim. Applicants respectfully assert that these claims are non-obvious, as being dependent upon allowable independent claims. Reconsideration and withdrawal of this rejection are earnestly requested.

CONCLUSION

For at least the foregoing reasons, it is believed that all presently pending claims 5-6 and 11 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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